

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

Claims 1-18 (Cancelled)

Claim 19. (Currently Amended) An embedding method for embedding additional watermarking information into data representing text information as a black and white binary document image, comprising the steps of:

detecting a text image area;

splitting the detected text image area into two or more subblocks;

dividing the two or more subblocks into two or more groups;

extracting features for each of the two or more groups;

modifying the extracted features based on the additional watermarking information by increasing the extracted features of one group and decreasing the extracted features of another group; and

embedding the modified features into each of the two or more groups as the additional watermarking information, wherein the embedded additional watermark information is provided into said data representing text information in a manner that is not visually recognizable by human perception.

Claim 20. (Previously Presented) The method according to claim 19, wherein the step of dividing divides the two or more subblocks into two or more groups wherein the total sum of area of the subblocks in each group is substantially equal.

Claim 21. (Previously Presented) The method according to claim 19, wherein the step of splitting splits the detected text image area into two or more subblocks wherein boundary lines between the two or more subblocks pass through individual characters of the text image.

Claim 22. (Previously Presented) The method according to claim 19, wherein the step of modifying the extracted features comprises increasing or decreasing the extracted features in one or more steps.

Claim 23. (Previously Presented) The method according to claim 19, including the steps of detecting the embedded additional watermarking information by integrating the embedded features detected for each of the two or more groups.

Claim 24. (Previously Presented) The method according to claim 19, including:
dividing the detected text image area into two subblocks vertically and two or more subblocks horizontally;
dividing the subblocks into different physically located upper groups and physically located lower groups.

Claim 25. (Previously Presented) The method according to claim 19, including embedding 1 or more bits of additional watermarking information.

Claim 26. (Previously Presented) The method according to claim 23, including the step of detecting 1 or more bits of embedded additional watermarking information.

Claim 27. (Previously Presented) The method according to claim 19, including:
integrating the features detected from subblocks in each of the two or more groups to obtain an integrated value for each group; and
comparing the integrated values for the respective groups.

Claim 28. (Previously Presented) The method according to claim 19, wherein the extracted features comprise one or more features of black pixels, a transitive number of black and white pixels, an occurrence frequency of a specific local pattern, and an average thickness of a line segment.

Claim 29. (Previously Presented) The method according to claim 19, wherein the text image area for embedding the additional watermarking information comprises a rectangle circumscribed around one or more text lines.

Claim 30. (New) The method according to claim 19, wherein the modified extracted features used for embedding additional watermarking information into data representing text information are statistically constant as compared to a state of no embedded watermarking to increase likelihood of detecting the watermarking information.